Du'Bois J. Ferguson Remediation Manager

Schlumberger Oilfield Service 300 Schlumberger Drive Sugar Land, TX 77478 Tel: 281-285-3692 <u>DFerguson3@slb.com</u>

February 10, 2011

VIA FedEx Overnight

Section Chief Environmental Enforcement Section U.S. Department of Justice PO Box 7611 Washington, DC 20044-7611

Craig Zeller
Remedial Project Manager
Superfund Division
U.S. EPA Region 4
61 Forsyth Street, SW
Atlanta, GA 30303

Re: DOJ Case No. 90-11-2-696/1

Subject:

January 2011 Monthly Report

Sangamo Weston/Twelvemile Creek/Lake Hartwell Superfund Site

Natural Resources Trustees Consent Decree

Dear Section Chief:

In accordance with the Consent Decree and Section XIV of the Unilateral Administrative Order for the above referenced site, Schlumberger is required to submit Progress Reports on a quarterly basis. Given the current pace of activities, we will be submitting Progress Reports on a monthly basis until further notice in satisfaction of the reporting requirements of the Consent Decree and Unilateral Administrative Order.

In keeping with Paragraph 20 of the Consent Decree:

I certify that the information contained in or accompanying this submission is true, accurate and complete. This certification is based on my personal preparation, review, or analysis of the submission, and/or supervision of persons who, acting on my instructions, made the verification that the submitted information is true, accurate and complete.

If you have any questions, please do not hesitate to contact me at (281) 285-3692.

Sincerely,

DuBois J. Ferguson

Remediation Manager



U.S. EPA REGION IV

SDMS

POOR LEGIBILITY

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cc: Honorable G. Ross Anderson, Jr.
 G. Ross Anderson, Jr. Federal Building and United States Courthouse
 315 South McDuffie Street, 2nd Floor Anderson, SC 29624

Honorable William W. Wilkins Nexsen Pruet 55 E. Camperdown Way Suite 400 Greenville SC 29601

Leon C. Harmon Esq. Nexsen Pruet 55 E. Camperdown Way Suite 400 Greenville SC 29601

John Cresswell
Assistant Director
Division of Site Assessment and Remediation
Bureau of Land &Waste Management
SC Department of Health and
Environmental Control
2600 Bull Street
Columbia, SC 29201

Regional Solicitor's Office U.S. Department of the Interior Attn: Harriet M. Deal 75 Spring Street, SW Room 304 Atlanta, GA 30303

Diane Beeman & Diane Duncan Ecological Services Office U.S. Fish and Wildlife Service 176 Croghan Spur Road, Suite 200 Charleston, SC 29407

Paul League SC Department of Natural Resources Office of Chief Counsel 1000 Assembly Street Columbia, SC 29202

Anthony Rabern Georgia Department of Natural Resources 3695 Highway 197 Clarkesville, GA 30523 Office of the Attorney General Timothy J. Ritzka Assistant Attorney General 40 Capitol Square SW Atlanta, GA 30334

Jamie Sykes
Richard B. Russell Project Office
4144 Russell Dam Drive
Elberton, GA 30635

Frank S. Holleman III Wyche Burgess Freeman & Parham, P.A. 44 East Camperdown Way Greenville SC 29601-3591

Mr. Paul Doody ARCADIS 6723 Towpath Road Syracuse, NY 13214-0066

Mr. John N. Hanson Beveridge & Diamond, P.C. 1350 I Street, N.W. Suite 700 Washington, D.C. 20005-3311

January 2011 Monthly Report Sangamo Weston/Twelvemile Creek/Lake Hartwell Superfund Site Operable Unit 2

Activities Initiated/Completed

- Completed construction of siphons at WSI and operated the system to lower the water level behind the WSI dam in preparation for dam demolition
- Dredge Clare has progressed to STA 15+00, and continues to move back and forth along the creek to reach deeper sediment, to the extent practicable, accessible by the creek level being lowered.
- Dredge Kami is located at approximately Station 49+90 (Woodside II Impoundment).
- On January 18, 2011, SCDHEC Solid Waste Management Regional personnel were onsite for a general visit/inspection and performed a Class Three Landfill Inspection in accordance with Regulation 61-107.19, Part V. The inspection indicated that the facility was operating properly, and no problems were observed. The completed Inspection Form is provided as Attachment 1.
- Received a response dated January 19, 2011 from the Trustee Council on their proposed modification to the dredge verification protocols.
- Received an approval response from the Trustee Council dated January 25, 2011 to the Dredge Verification Report STA 5+00 to STA 10+00.

Results of Sampling, Tests, and Other Data

- Sampling and analysis is being conducted relative to the creek turbidity, and water treatment system (WTS) effluent water. Results for the effluent water are attached (Attachment 2) and the continuous turbidity monitoring data is available upon written request.
- Project photographs are included as Attachment 3.

Plans, Reports, and other Deliverables

 Analytical data related to samples collected from the WTS to assess water treatment effluent water were submitted to SCDHEC in the December Monthly Report (submitted January 28, 2011) in Attachment 2.

Work Planned for February 2011

- Continue dredge verification surveys with submittal of each 500 foot section to the Special Receivers and their consultant. Expecting STA 10+00 to STA 13+50 and STA 45+00 to 50+00.
- Continue placement of dredged sediment in SMU.

- Continue monitoring WTS discharge.
- Complete dredging in the WSI impoundment.
- Continue dredging in the WSII impoundment.
- Initiate demolition of WSI dam.

Issues Encountered, Anticipated Delays, Solutions

- Extreme weather conditions (e.g., subfreezing temperatures, large snow fall) during the week of January 10th continued to impact site operations, including temporary postponement of operations and frozen and/or broken components, despite Contractor's winterization efforts.
- Continuing to handle significant amount of debris and vegetation which presented material handling challenges and some delays to dredging near the Woodside I dam.
- The sluice gate used to release sediments from the Easley Central Dam remains partially open due to mechanical issues and debris blocking closure.



Class Three Landfill Inspection Form Regulation 61-107.19, Part V

PREMOTE PROTECT: PROMPER		
Facility Name: 12 Mile Creek 5M4	Date/Time of Inspection /810020/6	24 (5.)
County: Prot ans	Permit #:	
Reason for Inspection: X Routine; Follow-up; C		_
Current Weather Conditions: Claudy Sicre 40°	The second secon	
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1 - Meets or exceeds regulatory requirements; 2A - Improvement r	needed (minor issues exist; corrective measures recommended);	ý a L
2B - Improvement needed (moderate Issues exist, corrective action recurring Issues with minimal or ne corrective action taken - alleger	in required and scheduled); 3 - Unacceptable (serious issues and/	or.
ment referral required); Y - Yes: Meets or exceeds regulatory required	rements: N - No: Corrective measures recommended that should	
be fixed by the next inspection or an agreed upon completion date;	NA - Not applicable; NI - Not inspected	
Procedures for Excluding Receipt of Unapproved Waste	Scale Requirements (258,36)	jarri,
(258.20)	26. Y NANI Scales installed and functioning property	1.1
Overall effectiveness of Special Waste Analysis and	Required Equipment to Operate Landfill (258:31) 27. YN NA NI Required equipment operational – if not	3 4 3
Implementation Plan (SWAIP) 2. Y NNA NI Trained waste screener present	27. YN NA NI Required equipment operational – if not please provide details in comments as to the	9 : : :
3. Y N NA NI Random daily load inspections conducted and	type of equipment down for repairs, impact to	•
documented	Screens operations, and status on temporary replace	a
Y N NA NI Records of unacceptable waste maintained Y N NA NI Personnel training program on recognition of	Certified Landfill Manager/Supervisor (258.32)	
regulated hazardous waste and PCB waste	28. Y N NANI Manager and supervisor certified by SCIDHE	≣C
6. Y N NA NI Record of Notification to Department within	29. Y N NAMI Certified manager or supervisor on site	
72-hours of hazardous or PCB waste receipt 7. Y N MANI Unauthorized wastes removed from working	Leachate Collection System (258.33 and 34) 30. YN (A)NI Leachate handling agreement in place	
7. 1 N pix NI Unautrorized wastes removed from working lace by the end of the operating day	31. Leachate collection system management	7 1
Cover Meterial Requirements (258.21)	Leachate Recirculation System (258 Subpart I and Parmit)	·
8. 11 1/8 ≥ 6" soil (short-term cover)	32. Leachate recirculation system management	
9.	33. Y N IN I	F j
11. Y N NA NI Adequate soil quantity available for cover	34. No Leachate seep management	
Control of (258.21, 22, 24, 25 and 37):	35 Leachate collection system management	
12 Blowing littler 13 Off-site odors	Testing of Municipal Solid Waste (MSW) Incinerator Ash (258.35)	
13. / Oil-site odors 14. / Disease vectors	36. Y NN NI MSW incinerator ash management	
15 Fires/Open burning	Sign Requirements (258.36)	d og
16Scavenging	37. Y NAM NI Required signs posted	
Access Requirements (258:25) 17. Condition of access controls	Condition of Monitoring Wells (258.51) 38. Monitoring well maintenance program	1. :
18: _fCondition of all weather roads entrance	Working Face/Elevation (258.87)	
19 Condition of all weather - internal haut roads	39. (Y)N NA NI Method of elevation control with	
Rum-en/Rum-off Controls (258.26) 20. Condition of ditches/swales	benchmark Plans, and Pannit (Permit)	
21. Condition of barms/terraces/downchutes	49. YN NANT Operating in accordance with approved start	is I
22. Condition of sedimentation pends	and general permit	
Leachate Seeps (258:26 and 27) 23. W/\ Leachate seep management	41. Y N NA NI Permitted engineering drawings svailable	
23. <u>N//1</u> Leachate seep management Liquid Restrictions (258.28)	42. Y N N/4 NI Permitted operational plan available 43. Y N N/4 NI Permitted stabilization/landscaping plan	1
24. Free of unauthorized bulk or non-containerized	available	
liquids	44. YNNANI Permitted contingency plan available	
Record Keeping Requirements (258:29) 25. YN NA(NI) Required records are maintained in the	45. Y N NA NI Permitted approved groundwater-monitoring plan available	!
landfill's operating record	46. Y N NA N Permitted closure plan available	
· · · · · · · · · · · · · · · · · · ·	47. YNNAN Permitted post-closure plan available	
Name of those present during the inspection:	V	
termino or minera historist ministrating ministration.	<u> </u>	
Comments: NO PROBLEMS MITED DUMENTE THIS	0.700.1	
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Inspection Item Corrective action	n required Date to be complete	d
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Additional comment page: YN Pho	otos taken: YN	
The signature below certifies that the SCDHEC inspector has person	onally checked each item and has answered according to the true	. 1
condition existing at the time of inspection.	1	
21. 11. 11. 11. 12. 12. 12. 12.	that has	ŀ
Stychen Sandley to Alcedis	Name /	-

Facility Representative SCOHEC Inspector |

DHEC 389 (08/2008) SOUTH CAROLENA DEPARTMENT OF HEALTH AND ENVIRONMENTAL CONTROL

Original (White) - SCOHEC/BLYM Copy (Yellow) - Facility Copy (Pink) - Regional EQC Office

ARCADIS

Attachment 2



Mr. Dale Stoudemire, Manager
South Carolina Department of Health and Environmental Control
Bureau of Water/Water Pollution Control Division
Data Management Section
2600 Bull Street
Columbia, South Carolina 29201

ARCADIS 6723 Towpath Road P.O. Box 66 Syracuse New York 13214-0066 Tel 315.446.9120 Fax 315.449.0017 www.arcadis-us.com

ENVIRONMENTAL

Subject:

Schlumberger Technology Corporation, Twelvemile Creek Restoration Project Pickens County, South Carolina December 2010 Sampling Results Report

Dear Mr. Stoudemire:

On behalf of Schlumberger Technology Corporation (STC), ARCADIS is providing a summary of sampling results for the Twelvemile Creek Restoration Project in Pickens County for the month of December 2010 in accordance with the October 15, 2009 letter from Butch Swygert of South Carolina Department of Health and Environmental Control (SCDHEC) to Chris Moody of ARCADIS and the August 9, 2010 SCDHEC construction operation approval memorandum, which replaces the March 11, 2010 SCDHEC construction operation approval memorandum. The August 9, 2010 approval memorandum upgrades the onsite water treatment plant to a Group III – Physical/Chemical facility with a maximum discharge of 8.64 million gallons per day (MGD).

Table 1 contains the daily discharge information from the water treatment plant to Twelvemile Creek. This data is recorded onsite and is reviewed by a South Carolina certified water treatment plant operator. The maximum daily discharge for December 2010 was 3.33 MGD on December 29. The average discharge from the water treatment plant for the month of December was 1.51 MGD.

Table 2 contains the results of the analyses described in Table 1 of the October 15, 2009 letter that were performed on the water treatment plant effluent during the month of December 2010. The Laboratory Services Reports from Rogers & Callcott Laboratory Services related to these tests are provided in Attachment A. The samples were analyzed for pH, temperature, total suspended solids and PCBs. The results of these tests were within the ranges outlined in the October 15, 2009 letter.

Date:

January 28, 2011

Contact:

Lance S. Ketcham

Phone:

315.671.9163

Email:

lance.ketcham@ arcadis-us.com

Our ref: MT001019 ARCADIS

Mr. Dale Stoudemire

January 28, 2011

Table 3 summarizes the results of the whole effluent toxicity (WET) testing; the Laboratory Services Reports for these tests are provided in Attachment B. Samples for toxicity testing were collected on December 7, 8 and 10, 2010. The acute toxicity testing passed for the month of December. Chronic testing for the dates mentioned indicated minimal effects on survival, however the results for reproduction were not within the ranges outlined in October 14, 2009 letter. Subsequent chronic testing was conducted on December 17, 20 and 22, 2010 and results were provided on January 3, 2011. The results from the subsequent testing again indicated minimal effect on survival and less impact on reproduction than the earlier test; however, the results were still just above the ranges outlined in the October 15, 2009 letter. The processes of the water treatment plant were modified to address the chronic WET testing results and subsequent re-sampling in the month of January shows results within the ranges outlined in the October 15, 2009 letter (results to be provided in next month's report).

If you have any questions on the above, please feel free to contact me.

Sincerely,

ARCADIS

Lance S. Ketcham Principal Engineer

Copies:

Melinda Vickers, SCDHEC Eric Kim, SCDHEC Du'Bois J. Ferguson, STC Gary Odom, STC Paul Doody, ARCADIS

Table 1. Daily Discharge from Water Treatment Plant for December 2010. Twelvemile Creek Restoration Project, **Pickens County**

Date	Discharge, MGD
Monthly Avg ¹	MR
Daily Max 1	MR
12/1/2010	1.77
12/2/2010	0.25
12/3/2010	1.65
12/4/2010	0.19
12/5/2010	0.00
12/6/2010	1.17
12/7/2010	0.84
12/8/2010	0.83
12/9/2010	2.16
12/10/2010	2.64
12/11/2010	2.20
12/12/2010	0.00
12/13/2010	2.53
12/14/2010	2.03
12/15/2010	1.37
12/16/2010	1.06
12/17/2010	1.68
12/18/2010	1.79
12/19/2010	0.00
12/20/2010	3.29
12/21/2010	2.58
12/22/2010	2.23
12/23/2010	2.73
12/24/2010	0.00
12/25/2010	0.00
12/26/2010	0.00
12/27/2010	1.33
12/28/2010	2.93
12/29/2010	3.33
12/30/2010	2.39
12/31/2010	1.85
Total	46.82
Days per Month	31
Average	1.51

Notes:

- 1. Data is from onsite records detailing the daily discharge volumes to Twelvemile Creek; a discharge of 0 MGD is recorded when the treatment plant is not operating or discharging to Twelvemile Creek. Discharge data was recorded by the South Carolina certified wastewater treatement plant operator from Rogers & Calicott.
- 2. The bolded value is the maximum daily discharge recorded.

Superscript Notes:

1 Discharge reporting guidelines are outlined in the 10/15/2009 letter from Butch Swygert (South Carolina Department of Health and Environmental Control) to Chris Moody (ARCADIS).

Acronyms and Abbreviations:

Avg - average Max - maximum

MGD - million gallons per day

MR - monitor and report

Table 2. Effluent Sampling Result for December 2010. Twelvemile Creek Restoration/Project, Pickens County

Sample	l	Sample	Week	Sample Date and	Ha	Temp.	TSS	j.	PCB (µg/L)						
Number	Location	Type	TTOUR	Time	Time P''		(mg/L)	PCB-1016	PCB-1221	PCB-1232	PCB-1242	PCB-1248	PCB-1254	PCB-1260	
Monthly Avg. 1		-	_	-	6.0 to 8.5		25	0.5	0.5	0.5	0.5	0:5	0:5	0.5	
Daily Max.	-	-	-	-	6.0 to 8.5	i	45	0.5	0.5	0.5	0.5	0.5	0.5	0.5	
AC92024	WTP Effluent Discharge	G	1	12/7/2010 09:20	6.6	7.1	NA	NA	NA	NA	NA	NA	· NA	NA	
AC92025	WTP Effluent Discharge	С		12/7/2010 09:15	NÀ	NA	7.0	<0:5	<0.5	<0.5	<0.5	<0.5	<0:5	<0.5	
AC92491	WTP Effluent Discharge	G	2	12/14/2010 16:00	6.5	7.3	NA	· NA	NA	NA	NA	NA	NA	NA NA	
AC92492	WTP Effluent:Discharge	C		12/14/2010 15:55	NA .	. NA	8.8	<0:5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
AC92931	WTP Effluent Discharge	G	3	12/21/2010 09:25	6.7	6.6	NA	NA	NA	NA	NA	NA	NA	NA	
AC92932	WTP Effluent Discharge	С		12/21/2010 09:20	NA	NA NA	8.4	<0.5	<0.5	<0.5	<0.5	<0.5	<0:5	<0.5	
AC93170	WTP Effluent Discharge	G	4	12/29/2010 09:25	6.5	4.5	NA	ΝA	NA:	NA	NA .	NA	NA	NA	
AC93171	WTP Effluent Discharge	С		12/29/2010 09:20	_ NA	NA	3.0	<0:5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
				Average	6.6	6.4	6.8	<u> </u>	-	•		-		-	

Notes:

- 1. Sampling results compiled from Laboratory Services Reports provided by Rogers & Callcot Laboratory Services and submitted in tabular form as required per the 10/15/2009 letter from Butch Swygert (South Carolina Department of Health, and Environmental Control [SCDHEC]) to Chris Moody (ARCADIS) and the 3/11/2010 SCDHEC construction and operational approval memorandum.
- 2. The monthly average includes non-detect readings (indicated by "<") and assumes a value equal to the detection limit. Monthly averages are not calculated for parameters without a detected concentration (indicated by "-").

Superscript Note:

¹ Discharge reporting guidelines and limits are outlined in the 10/15/2009 letter from Butch Swygert (SDHEC) to Chris Moody (ARCADIS)

Acronyms and Abbreviations:

°C - degrees centigrade

G - grab sample

C - 24-hour composite sample

µg/L - micrograms per liter

MGD - million gallons per day

mg/L - milligrams per liter

NA - not analyzed

PCB - polychlorinated biphenyl

Temp. - temperature

Table 3. Whole Effluent Toxicity Result for December 2010. Twelvemile Creek Restoration Project, Pickens County

WET Analysis	Monthly Avg. 1	Daily Max. ¹	Event 1 Results	Event 2 Results
Ceriodaphnia dubia Chronic WET @ CTC=17.4%	25%	40%	75 1%	42.2%
Cerlodaphnia dubia Chronic WET-Reproduction @ CTC=17.4%	MR, %	MR, %	75.1%	42.2%
Ceriodaphnia dubia Chronic WET-Survival @ CTC=17.4%	MR, %	MR, %	0:0%	0.0%
Ceriodaphnia dubia Acute WET @ ATC=35.5%	-	0 ²	0	NA

Notes:

- 1. WET testing was performed by ETT.
- 2. Results of the WET testing are presented as the percent reduction relative to the control sample.
- 3. Samples for Event 1 were collected on 12/7, 12/8, and 12/10/2010. One composite sample was collected each day (sample numbers AC91981, AC92064, and AC92283, respectively) to complete the Chronic WET testing. Sample AC91881 was used in the Acute WET testing.
- 4. Samples for Event 2 were collected on 12/17, 12/20, and 12/22/2010. One composite sample was collected each day (sample numbers AC92779, AC92795, and AC92959, respectively) to complete the Chronic WET testing. Sample AC90996 was used in the Acute WET testing.
- 5. Shaded values indicate that the results are not within the ranges outlined in the 10/15/2009 letter.

Superscript Notes:

¹ Discharge reporting guidelines and limits are outlined in the 10/15/2009 letter from Butch Swygert (South Carolina Department of Health and Environmental Control) to Chris Moody (ARCADIS).

Acronyms and Abbreviations:

MR - monitor and report

NA - not analyzed

WET - whole effluent toxicity

² A results of "0" indicates a passing result.

ARCADIS

Attachment A

Laboratory Services Report: October 15, 2009 Table 1 Analyses

ROGERS & CALLCOTT LABORATORY SERVICES

AN EMPLOYEE-OWNED COMPANY

P.O. Box 5655, Greenville, SC 29606 Phone: (864) 232-1556 - FAX: (864) 232-6140

Laboratory Services Report

Client:

Schlumberger Technology Corporation Sangamo - Twelve Mile Creek Project

Attention Gary Odom by email

Date Received:

12/07/2010

Time Received:

12:03

Date Reported:

12/09/2010

South Carolina Laboratory Identification 23105

North Carolina Laboratory Certificate Number 27

NELAP Laboratory Identification E87822

Sample Number

Sample Description

AC92024

Schlumberger Technology TMC Water Treatment Plant Effluent Discharge grab,

collected on 12/07/2010 at 09:20

AC92025

Schlumberger Technology TMC Water Treatment Plant Effluent Discharge

composite, collected on 12/07/2010 at 09:15

The attached report is for the samples that were received and are referenced above. Rogers and Callcott maintains a formal QA/QC program. Unless otherwise noted, all analyses performed under NELAP certification have complied with all the requirements of the NELAC standard. The analyses met the QA/QC confidence interval for each test method unless otherwise qualified. Estimated uncertainty available upon request.

We appreciate the opportunity to be of service to you. Please contact us at (864) 232-1556 should you have any questions about this report.

Results released by:

authorized signature

Carbon copy: Email to L Ketcham P Dougher A Kohler S Cary

Results reviewed by:

This report may not be reproduced, except in full, without written permission from Rogers & Calicott, Inc.

Sample Number Sample Description, Date and Time Collected										
AC92024	Schlumberger Techno at 09:20	ology TMC Water T	reatment Pi	ant Effluen	nt Discharge grab, c	ollected on	12/07/2010			
Parameter	Result	Unit	Flag	RDL	Date/Time	Analyst	Method			
pH (Field)	6.8	pH units		0.1	12/07/2010 09:20	LRW	SM 4500HB			
Temperature (Fleid)	7.1	degrees C		0.1	12/07/2010 09:20	LRW	SM 2550B			

Sample Number S	unple Description, Date and Time Collected											
	chlumberger Technolo 2/07/2010 at 09:15	lumberger Technology TMC Water Treatment Plant Effluent Discharge composite, 07/2010 at 09:15										
Parameter	Result	Unit	Flag	RDL	Date/Time	Analyst	Method					
3 to 5 day turn around	Completed				12/09/2010 00:00							
Total Suspended Solids	7.0	mg/l		2.0	12/07/2010 16:04	JLA	SM 2540D					
Polychlorinated Biphenyls (PCBs)	. 551						:					
PCB-1016	< RDL	ug/l		0.5	12/09/2010 00:06	RKH	EPA 608					
PCB-1221	< RDL	ug/l		0.5	12/09/2010 00:06	RKH	EPA 608					
PCB-1232	< RDL	ug/l		0.5	12/09/2010 00:06	RKH	EPA 608					
PCB-1242	< RDL	ug/l		0.5	12/09/2010 00:06	RKH	EPA 608					
PCB-1248	< RDL	ug/l		0.5	12/09/2010 00:06	RKH	EPA 608					
PCB-1254	< RDL	ug/i		0.5	12/09/2010 00:06	RKH	EPA 608					
PCB-1260	< RDL	ug/l		0.5	12/09/2010 00:06	RKH	EPA 608					
2,4,5,6-Tetrachloro-m-xylene, (Surro	gate 93	%		0	12/09/2010 00:06	RKH	EPA 608					
Decachlorobiphenyl, (Surrorate)	79	%		0	12/09/2010 00:06	RKH	EPA 608					
Liquid-liquid Extraction Pest/PCB 60	8 Completed				12/07/2010 12:45	DBB	EPA 608					



ROGERS & CALLCOTT

CHAIN OF CUSTODY RECORD

PAGE ____OF ___

P.O. Box 5 Phone (88	BORATORY SERVICES 5855, Greenville, SC 29606 14) 232-1556 Fax (884) 232-6140 Address: 426 Fairforest Way Greenville, SC 29607				P P C	/N /	Filtered (Yes/No) Cooled (Yes/No) Container Type (P/G) Container Volume Sample Type (Grab/Composite)
Report To: Telephone No. PO No. Rogers & Yr. / 0 Callcott Time	FAX No.	er of Containers	PA A		Way/		Sample Source (WW, GW, DW, Other Sample Source Chlorinated (Yes/No) Lab Receipt Cl. Check Lab Receipt pH Check Preserved (Code) A-None D-NoOH G-Boric Acid B-HNO, E-HCL H-Ascorbic Acid C-H ₂ SO, F-No ₂ S ₂ O, i-
Lab No. Date			PARAMETERS 755	- pcB			COMMENTS:
WANG 7 124 7 10979	WATEN TREATMENT PLANT LTF. DISCH.			4			Saugette State 1095 ON 12/6/10 Time prof. By RAC AM2001
SAMPLER Relinquished by (Sig.)	Date/Time Received by (Sig				ate/Tin	_	THING 7.1 REMANDE 0920 12/7/10 By RLC KNOWN HAZARDS ASSOCIATED WITH SAMPLES
Relinquished by (Sig.) Relinquished by (Sig.) (5)	Date/Time Date/Time Date/Time Date/Time Shipper Name & Received by (Sig. 6) Shipper Name &	.) # .)			ate/Tin		Temperature of blank or representative sample At time of collection

ROGERS & CALLCOTT LABORATORY SERVICES

AN EMPLOYEE-OWNED COMPANY

P.O. Box 5655, Greenville, SC 29606 Phone: (864) 232-1556 - FAX: (864) 232-6140

Laboratory Services Report

Client:

Schlumberger Technology Corporation Sangamo - Twelve Mile Creek Project

Attention Gary Odom by email

Date Received:

12/14/2010

Time Received:

17:15

Date Reported:

12/16/2010

South Carolina Laboratory Identification 23105

North Carolina Laboratory Certificate Number 27

NELAP Laboratory Identification E87822

Sample Number

Sample Description

AC92491

Schlumberger Technology TMC Water Treatment Plant Effluent Discharge grab,

collected on 12/14/2010 at 16:00

AC92492

Schlumberger Technology TMC Water Treatment Plant Effluent Discharge

composite, collected on 12/14/2010 at 15:55

The attached report is for the samples that were received and are referenced above. Rogers and Callcott maintains a formal QA/QC program. Unless otherwise noted, all analyses performed under NELAP certification have compiled with all the requirements of the NELAC standard. The analyses met the QA/QC confidence interval for each test method unless otherwise qualified. Estimated uncertainty available upon request.

We appreciate the opportunity to be of service to you. Please contact us at (864) 232-1556 should you have any questions about this report.

Results released by:

authorized signature

Results reviewed by:

Col

Carbon copy: Email to L Ketcham P Dougher A Kohler S Cary

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Sample Number	Sample Description, Date and Time Collected										
AC92491	Schlumberger Techno at 16:00	logy TMC Water T	reatment Pla	ant Effluen	t Discharge grab, c	ollected on	12/14/2010				
Parameter	Result	Unit	Flag	RDL	Date/Time	Analyst	Method				
pH (Fleld)	6.5	pH units		0.1	12/14/2010 16:00	LRW	SM 4500HB				
Temperature (Field)	7.3	degrees C		0.1	12/14/2010 16:00	LRW	SM 2550B				

<u>Sample Number</u>	Sample Description, D	ate and Time (Collected				
AC92492	Schlumberger Technolo 12/14/2010 at 15:55	ogy TMC Water	Treatment Pla	ant Effluen	t Discharge compo	site, collect	ed on
Parameter	Result	Unit	Flag	RDL	Date/Time	Analyst	Method
3 to 5 day turn around	Completed				12/16/2010 00:00		
Total Suspended Solids	8.8	mg/l		2.0	12/15/2010 07:45	JLA	SM 2540D
Polychlorinated Biphenyls (PCBs							
PCB-1016	< RDL	ug/l		0.5	12/15/2010 19:01	RKH	EPA 608
PCB-1221	< RDL	ug/l		0.5	12/15/2010 19:01	RKH	EPA 608
PCB-1232	< RDL	ug/l		0.5	12/15/2010 19:01	RKH	EPA 608
PCB-1242	< RDL	ug/l		0.5	12/15/2010 19:01	RKH	EPA 608
PCB-1248	< RDL	ug/i		0.5	12/15/2010 19:01	RKH	EPA 608
PCB-1254	< RDL	ug/l		0.5	12/15/2010 19:01	RKH	EPA 608
PCB-1260	< RDL	ug/l		0.5	12/15/2010 19:01	RKH	EPA 608
2,4,5,6-Tetrachloro-m-xylene, (Sui	тоgate 87	%		0	12/15/2010 19:01	RKH	EPA 608
Decachlorobiphenyl, (Surrorate)	86	%		0	12/15/2010 19:01	RKH	EPA 608
Liquid-liquid Extraction Pest/PCB	608 Completed				12/15/2010 09:30	DBB	EPA 608



AC

ROGERS & CALLCOTT

CHAIN OF CUSTODY RECORD

PAGE ____OF ___

[ABORATOR	Y SERVICES								
P.O. Box 5855, Greenville, S						[N	/W/		/ / Filtered (Yes/No)
Phone (884) 232-1556 Fa Shipping Address: 426 Fair							/y /	1	Cooled (Yes/No)
	le, SC 29607		1		1	/ø/	4		/ / Container Type (P/C)
Client Name Schlum Bi-NG	EN	1				/	//		/ / Container Volume
Address		'	1		$\mathcal{L}c$:/c		1	// Sample Type (Grab/Composite)
		'	1		WN	/מען			/ / Sample Source (WW, GW, DW, Other)
Report To:					$\nu l/l$	N/			/ Somple Source Chlorinated (Yes/No)
•	No	Sers		M	Ne	9/			Lab Receipt Ci. Check mcaj
•	ject No	Contoiners		NA	7				Lab Receipt pH Check /12-15-10
PO NO PIO	BCL NO.			A	A		i i		Preserved (Code)
	nple Description	Number of	8						A-None D-NaOH G-Baric Acid B-HNO, E-HCL H-Ascarbic Acid C-H _a SO _a F-Na _b S _a O ₃ i
Lab No.		Ž		755	PCB				COMMENTS:
-Ray		Total	PARAMETERS	\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	ρ_{c}				
92492 1555 18/4 WATENT	MENT PLANT	2		1	I.				SAMOLIANSITOUTE 1555
DF.					7				
									By KtC
									AC92491
									DH6.5 GRABTAKEN+
									TEMO 7.3 / READE, 1600 ON
									12/14/10 B, R+C.
SAMPLER Relinguished by 15/2 Date/ Date/	some (FB)	لعظ	بلعب			Dote/Ti	me 715		KNOWN HAZARDS ASSOCIATED WITH SAMPLES
Relinquished by (Sig.) Date	2 1 1 /0			<u> </u>	~~~	// <u>/ </u>			
3	Shipper Name &							-	
Relinquished by (Sig.)	/Time Recéived by (Sig	.)			0	ote/T	me		Temperature of blank or representative sample
9	Shipper Name &								At time of collection
Seal # at'chd by Recvd. Into	act by Seal #	at'c	hd by	O	Recv	d. Inta	ct by C		At time or loo receipt 17-

P.O. Box 5655, Greenville, SC 29606 Phone: (864) 232-1556 - FAX: (864) 232-6140

Laboratory Services Report

Client:

Schlumberger Technology Corporation Sangamo - Twelve Mile Creek Project

Attention Gary Odom by email

Date Received:

12/21/2010

Time Received:

12:02

Date Reported:

12/23/2010

South Carolina Laboratory Identification 23105

North Carolina Laboratory Certificate Number 27

NELAP Laboratory Identification E87822

Sample Number

Sample Description

AC92931

Schlumberger Technology TMC Water Treatment Plant Effluent Discharge grab,

collected on 12/21/2010 at 09:25

AC92932

Schlumberger Technology TMC Water Treatment Plant Effluent Discharge

composite, collected on 12/21/2010 at 09:20

The attached report is for the samples that were received and are referenced above. Rogers and Callcott maintains a formal QA/QC program. Unless otherwise noted, all analyses performed under NELAP certification have compiled with all the requirements of the NELAC standard. The analyses met the QA/QC confidence interval for each test method unless otherwise qualified. Estimated uncertainty available upon request.

We appreciate the opportunity to be of service to you. Please contact us at (864) 232-1556 should you have any questions about this report.

Results released by:

authorized signature

Carbon copy: Email to L Ketcham P Dougher A Kohler S Cary

Results reviewed by:

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Sample Number	mbet Sample Description, Date and Time Collected									
AC92931	Schlumberger Techno at 09:25	logy TMC Water T	reatment Pla	ant Effluer	nt Discharge grab, c	collected on	12/21/2010			
Parameter	Result	Unit	Flag	RDL	Date/Time	Analyst	Method			
pH (Fleid)	6.7	pH units		0.1	12/21/2010 09:25	LRW	SM 4500HB			
Temperature (Field)	6.6	degrees C		0.1	12/21/2010 09:25	LRW	SM 2550B			

Sample Number S	ample Description, D	ate and Time C	Collected			-	
	chlumberger Technolo 2/21/2010 at 09:20	ogy TMC Water	Treatment Pla	ant Effluen	t Discharge compo	site, collect	ed on
Parameter	Result	Unit	Flag	RDL	Date/Time	Analyst	Method
3 to 5 day turn around	Completed				12/23/2010 00:00		
Total Suspended Solids	8.4	mg/l		2.0	12/21/2010 14:45	JLA	SM 2540D
Polychlorinated Biphenyls (PCBs)							
PCB-1016	< RDL	ug/l		0.5	12/22/2010 21:38	RKH	EPA 608
PCB-1221	< RDL	ug/l		0.5	12/22/2010 21:38	RKH	EPA 608
PCB-1232	< RDL	ug/l		0.5	12/22/2010 21:38	RKH	EPA 608
PCB-1242	< RDL	ug/l		0.5	12/22/2010 21:38	RKH	EPA 608
PCB-1248	< RDL	ug/l		0.5	12/22/2010 21:38	RKH	EPA 608
PCB-1254	< RDL	ug/l		0.5	12/22/2010 21:38	RKH	EPA 608
PCB-1260	< RDL	ug/l		0.5	12/22/2010 21:38	RKH	EPA 608
2,4,5,6-Tetrachioro-m-xylene, (Surro	ogate 96	%		0	12/22/2010 21:38	RKH	EPA 608
Decachlorobiphenyl, (Surrorate)	94	%		0	12/22/2010 21:38	RKH	EPA 608
Liquid-liquid Extraction Pest/PCB 60	8 Completed				12/21/2010 12:40	DBB	EPA 608



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ROGERS & CALLCOTT IABORATORY SERVICES

CHAIN OF CUSTODY RECORD

PAGE ____OF ___

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<u> </u>	P.O. Box	: 5655, Greenville, SC 29606			İ			\mathcal{L}	N/.	<u>N /</u>	\bot	\bot	/ Filtered (Yes/No)
•		364) 232-1556 Fax (864) 232-6 Address: 428 Fairforest Way	140	1	:			$\angle y$	<u>/</u> /y		\bot	\bot	Cooled (Yes/No)
	<i>—</i>	Greenville, SC 29607		ŀ			,	l P	16			_	/ / Container Type (P/G)
Client Name	Schlu	im BERGER		İ				26/2	42/				/ Container Volume
Address					-		$L_{\mathcal{L}}$	<u> </u>			\mathcal{L}	\bot	/ Sample Type (Grab/Composite)
:		· · · · · · · · · · · · · · · · · · ·	·				WN	/WW					/ Sample Source (WW, GW, DW, Other)
Report To:	****			_			/-	<u>N /</u>	\bot	_/			Sample Source Chlorinated (Yes/No)
Telephone No		FAX No	·	Containers			لو <u>/۲</u> ۲		\bot	\bot	\bot	\bot	Lab Receipt Cl. Check
PO No				<u></u>	ľ	N	Kevy	<u> </u>				_	Lob Receipt pH Check
				4 .		4	A						Preserved (Code)
Rogers & Yr	Time	Sample Desc	ription	ber of	8								A-None D-NoOH G-Boric Acid B-HNO, E-HCL H-Ascorbic Acid C-H ₂ SO ₄ F-No ₂ S ₆ O ₃ I
Lab No. Date		,		fotal Number	PARAMETERS	755	PcB						COMMENTS:
				Tot	PAR	,	3						
9293212/21	0920	WATHUTHAT	MENT PLANT	3		2	1	-7					SAUDUEL SETONTO 0920
		WATHUTHLATI	*										SAUGUEL SETONTO 0920 ON 12/20/10, Time grof.
								i					By Rtc
													AC92931
													OH 6.7 GRAB TAKEN + READ
													Emp 6,6/0 0925 ON 12/21/10
													Bo Rtc
SAMPLER Relinguished by	esids (Date/Time	Received by (Sig.	.)	L.		C	ate/	Time			KNO	MN HAZARDS ASSOCIATED WITH SAMPLES
O Maril 1	Vail	12/2/10/202	Shipper Nome &	Y	ノ 	1	2/21/	10	120	Z	*	EN	104 EH VOLUME FOR
Relinquished by	(Sig.)	Date/Time	Received by (Sig.	.)				ate/				Z	-iED Duplicates
<u> </u>			Shipper Name &										
Relinquished by	(Sig.)	Date/Time	Received by (Sig.	.)			0	ate/	Time				perature of blank or representative sample
⑤			Shipper Name &	#	<u>-</u> .								t time of collection 2.4 °C
	atichd by	Recyd. Intact by	Seal #	at'c	hd b	Q	Recy	d. Int	act t	yΟ		A	time of loo receipt
Form Revised July	/ ク のの名												R/C COC FORM

ROGERS & CALLCOTT LABORATORY SERVICES

AN EMPLOYEE-OWNED COMPANY

P.O. Box 5655, Greenville, SC 29606 Phone: (864) 232-1556 - FAX: (864) 232-6140

Laboratory Services Report

Client:

Schlumberger Technology Corporation Sangamo - Twelve Mile Creek Project

Attention Gary Odom by email

Date Received:

12/29/2010

Time Received:

11:45

Date Reported:

01/03/2011

South Carolina Laboratory Identification 23105

North Carolina Laboratory Certificate Number 27

NELAP Laboratory Identification E87822

Sample Number

Sample Description

AC93170

Schlumberger Technology TMC Water Treatment Plant Effluent Discharge grab,

collected on 12/29/2010 at 09:25

AC93171

Schlumberger Technology TMC Water Treatment Plant Effluent Discharge

composite, collected on 12/29/2010 at 09:20

The attached report is for the samples that were received and are referenced above. Rogers and Callcott maintains a formal QA/QC program. Unless otherwise noted, all analyses performed under NELAP certification have compiled with all the requirements of the NELAC standard. The analyses met the QA/QC confidence interval for each test method unless otherwise qualified. Estimated uncertainty available upon request.

We appreciate the opportunity to be of service to you. Please contact us at (864) 232-1556 should you have any questions about this report.

Results released by

authofized signature

Carbon copy: Email to L Ketcham P Dougher A Kohter S Cary

Results reviewed by:

Sample Number	Sample Description,	Date and Time Co.	<u>llected</u>				
AC93170	Schlumberger Techno at 09:25	logy TMC Water T	reatment Pla	ant Effluer	it Discharge grab, c	collected on	12/29/2010
Parameter	Result	Unit	Flag	RDL	Date/Time	Analyst	Method
pH (Field)	6.5	pH units		0.1	12/29/2010 09:25	LRW	SM 4500HB
Temperature (Field)	4.5	degrees C		0.1	12/29/2010 09:25	LRW	SM 2550B

Sample Number S	ample Description, De	ate and Time (Collected						
	Schlumberger Technolo 2/29/2010 at 09:20	er Technology TMC Water Treatment Plant Effluent Discharge composite, o at 09:20							
Parameter	Result	Unit	Flag	RDL	Date/Time	Analyst	Method		
3 to 5 day turn around	Completed				01/03/2011 00:00				
Total Suspended Solids	3.0	mg/l		2.0	12/29/2010 12:35	JLA	SM 2540D		
Polychlorinated Biphenyls (PCBs)									
PCB-1016	< RDL	ug/l		0.5	12/30/2010 16:35	RKH	EPA 608		
PCB-1221	< RDL	ug/l		0.5	12/30/2010 16:35	RKH	EPA 608		
PCB-1232	< RDL	ug/l		0.5	12/30/2010 16:35	RKH	EPA 608		
PCB-1242	< RDL	ug/t		0.5	12/30/2010 16:35	RKH	EPA 608		
PCB-1248	< RDL	ug/l		0.5	12/30/2010 16:35	RKH	EPA 608		
PCB-1254	< RDL	ug/i		0.5	12/30/2010 16:35	RKH	EPA 608		
PCB-1260	< RDL	ug/l		0.5	12/30/2010 16:35	RKH	EPA 608		
2,4,5,6-Tetrachloro-m-xylene, (Surre	ogate 94	%		0	12/30/2010 16:35	RKH	EPA 608		
Decachlorobiphenyl, (Surrorate)	94	%		0	12/30/2010 16:35	RKH	EPA 608		
Liquid-liquid Extraction Pest/PCB 60	98 Completed				12/29/2010 13:15	DBB	EPA 608		

4

ROGERS & CALLCOTT

CHAIN OF CUSTODY RECORD

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	TA:	BORATO	RY SERV	/ICES														
	P.O. Box	5655, Greenville,	SC 29606						I	I/N					Filtered	(Yes	/No)	
	Phone (86 Shipping .	34) 232-1556 F Address: 426 Fa	irforest Way	140		1			$\sqrt{}$	/Y/		\mathcal{I}	I		Cooled (Yes/	No)	
<u></u>	.		rille, SC 29607					1	/A/	G /	\mathcal{I}	7	7.7	/ Cc	ntainer T	ype	(P/G)	
Client Name	cHlu	MBENG	EK_						46/2	64/	7	Π	7	Con	tainer Vol	lume	······	-
Address								\int_{C}	:/c	77	7	7	7	Samp	le Type (Grab	/Compo	site)
					}	İ		NW	/NW/				/ /	Sample	Source ((WW,	GW, DW	Other)
Report To:							\mathcal{L}	N/I	N/						Source C			(es/No)
Telephone No.		FAX	(No		Containers		N	4 Ne	9/_				/ Lo	b Receip	ot Cl, Ch	eck	mest	
PO No.				JMC_	1 1 2 1	i.	KA	171					Lob	Receipt	pH Chec	k	/12	279-10
1 I			,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	7-7-		L	A	A						P	reserved	(¢od	le)	
Rogers & Yr. 10 Callcott	Time	Sai	mple Desc	ription	ber of	8								A-None B-HNO, C-H,SO,	DNaOH EHCL FNa _e S _a (H-	-Boric Acid -Ascorbic	
Lab No. Date					Ž		755	PCB				ļ	_		COMMEN	TS:		
					Total Number	PARAMETERS	\ 	d										
93171 12/29 0	1920	NADRT	NAT ME	STALANT	2		1	1,					Sa	nolls	USETO	,47	0.0	720
		AF.	DiscH.					٧'					ON	12/20	110 7	lus	e Duo	0
														B	RIC T	3	7	_
														1			C93	
													PH	-6.5	La		TAL	
														04.5	1 ^	١.	0.09	
					_										9/10 K	7	7)	
SAMPLER Relinguished by SI	6.7	Date, 12/29/10	/Time	Received by (Sig. 2) Shipper Name &	Lu	Z	- /		ate/T	ime	1	KNC			ASSOCIATI	7		
Relinquished by (Si	ig.)	 	/Time	Received by (Sig. (4) Shipper Name &		- 0			ate/T									í
Relinquished by (Si	io \	Date	/Time	Received by (Sig.			\top	D	ate/T	lme	十	Ter	nperatu	re of b	onk or re	pres	entative	sample
(S)	'Y·/		j	5 Shipper Name &	4 .				Ī				•	of colle			0.7	<u>.</u> c
	hd byO	Recvd. Int	act by	Seal #		hd b	<u>0</u>	Recvo	s. Into	ct by	7	1	t time	of lab	receipt	_	1.4	<u>x</u>
Form Revised July 20																+-	R/C C	OC FORM

ARCADIS

Attachment B

Laboratory Services Report: Whole Effluent Toxicity Testing

ROGERS & CALLCOTT LABORATORY SERVICES

AN EMPLOYEE-OWNED COMPANY

P.O. Box 5655, Greenville, SC 29606 Phone: (864) 232-1556 - FAX: (864) 232-6140

Laboratory Services Report

Client:

Schlumberger Technology Corporation Sangamo - Twelve Mile Creek Project

Attention Gary Odom by email

Date Reported:

12/16/2010

South Carolina Laboratory Identification 23105 North Carolina Laboratory Certificate Number 27 **NELAP Laboratory Identification E87822**

Sample Number

Sample Description

AC91981

Schlumberger Technology TMC Water Treatment Plant Effluent Discharge

composite, collected on 12/07/2010 at 09:15

AC92064

Schlumberger Technology TMC Water Treatment Plant Effluent Discharge

composite, collected on 12/08/2010 at 09:30

AC92283

Schlumberger Technology TMC Water Treatment Plant Effluent Discharge

composite, collected on 12/10/2010 at 09:25

The attached report is for the samples that were received and are referenced above. Rogers and Callcott maintains a formal QA/QC program. Unless otherwise noted, all analyses performed under NELAP certification have complied with all the requirements of the NELAC standard. The analyses met the QA/QC confidence interval for each test method unless otherwise qualified. Estimated uncertainty available upon request.

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Case Narrative

AC91981 Schlumberger Technology TMC Water Treatment Plant Effluent Discharge composite, collected on 12/07/2010 at 09:15

Composite sample AC 91981 was subcontracted to ETT for Acute and Chronic Toxicity tests.

AC92064 Schlumberger Technology TMC Water Treatment Plant Effluent Discharge composite, collected on 12/08/2010 at 09:30

This sample was an additional composite subcontracted to complete the Chronic Toxicity testing.

AC92283 Schlumberger Technology TMC Water Treatment Plant Effluent Discharge composite, collected on 12/10/2010 at 09:25

This sample was an additional composite subcontracted to complete the Chronic Toxicity testing.

١

<u>Sample Number</u>	Sample Description, Da	<u>ite and Time (</u>	Collected					
AC91981	Schlumberger Technolo 12/07/2010 at 09:15	gy TMC Water	Treatment Pla	ant Effluent	Discharge compo	site, collect	ed on	
Parameter	Result	Unit	Flag	RDL	Date/Time	Analyst	Method	
Subcontracted Sample Analysis	Completed				12/18/2010 00:00			

Analysis comment for Subcontracted Sample Analysis: See enclosed subcontract report which includes a total of 10 pages for Acute and Chronic Toxicity from ETT Environmental Inc.

Sample Description, Date and Time Collected Sample Number AC92064 Schlumberger Technology TMC Water Treatment Plant Effluent Discharge composite, collected on 12/08/2010 at 09:30 Parameter Result Unit Flag RDL Date/Time Analyst Method Completed 12/16/2010 00:00 Subcontracted Sample Analysis

Analysis comment for Subcontracted Sample Analysis: See enclosed subcontract report which includes a total of 10 pages for Acute and Chronic Toxicity from ETT Environmental Inc.

Sample Number Sample Description, Date and Time Collected AC92283 Schlumberger Technology TMC Water Treatment Plant Effluent Discharge composite, collected on 12/10/2010 at 09:25 Result Parameter Unit Flag RDL Date/Time Analyst Method Completed 12/16/2010 00:00 Subcontracted Sample Analysis

Analysis comment for Subcontracted Sample Analysis: See enclosed subcontract report which includes a total of 10 pages for Acute and Chronic Toxicity from ETT Environmental Inc.



P.O. Box 18414, Graenville, SC 28606

4 Craftsman Court, Green, SC 29650

Ceriodaphnia dubia Survival and Reproduction Test

EPA-821-R-02-013 Method 1002

Test Species:

Cerlodaphnia dubia

Client: SCHLUMBERGER

Facility: EFFLUENT

NPDES #: SC

Test Date:

07-Dec-10

Laboratory ID#: T36594

Test Reviewed and Approved By:

Alliot 2013

Robert W. Kelley, Ph.D. Laboratory Manager



Certification #E87819

SCDHEC Certification #23104

Test results presented in this report conform to all requirements of NELAC, conducted under NELAC Certification Number E87819
Florida Dept. of Health. Included results pertain only to provided samples.

NCDENR Certification # 022



Signatu Carrillus, Department of Health and Environmental Control

DMR Attachment for Chronic Multi-Concentration Whole Effluent Toxicity Test Results Using Linear Interpolation

TWELVE MILE CREEK RESTORATION F Permit number SC

Month

12

Day

Discharge number

FINAL LIMITS 04/01/2010-

Monitoring period From

75.1%

Year

10

Parameter Code TCP3B

Year

10

Month

MLOC=1 CTC= 17.40% effluent

Day

31

			Mortali	ity Data	Reprodu	ction Data
		Group	# Adults	# Dcad	Group Average	Group Variance
Date	07-Dec-10	0	. 10	0	24.9	6.99
Lab ID	23104	8	10	0	20.8	17.07
		17.4	10	0	6.2	16.62
		35	10	1	3.1	5.66
IC25=	9.37%	50	10	1	1.6	4.04
48 hr Chronic LC50 =	> 100.0%	100	10	10	0.0	0,00
% Survival Effect at CTC	·= 0.0%		<u> </u>	·	·	·

		Mortali	ty Data	Reproduc	ction Data
	Group	# Adults	# Dead	Group Average	Group Variance
Date					
Lab ID 23104					
				<u> </u>	
TC06					
IC25=	<u></u>	- ; 		-	
48 M Chrome LCSV -				-	
% Survival Effect at CTC=					
% Reproduction Effect at CTC=					
and the second control of the second	A 40 1 AA				
Signature of Principal Executive Officer or				·	·
Name/Title of Principal Executive Officer (typea or printea)				

% Reproduction Effect at CTC=

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) DISCHARGE MONITORING REPORT (DMR)

Form Approved.
OMB No. 2040-0004

ADDRESS

DISCHARGE NUMBER DER VALID:

MINOR

FINAL LIMITS 04/01/2010-

PACILITY

| MONITORING PERIOD | YEAR | MO | DAY | YEAR | MO | DAY | DAY | TO | 10 | 12 | 31 |

NOTE: Read instructions before completing this form. **PARAMETER** QUANTITY OR LOADING QUANTITY OR CONCENTRATION FREQUENCY OF AMALYSIS **AVERAGE** MAXIMUM UNITS MINIMUM **AVERAGE** MAXIMUM UNITS Туре EX 76.1 SAMPLE 75.1 TCP3B LAB ID: 23104 Effect Statre 7Day MEASUREMENT **** 0 1/30 GR **** PER-Chr Ceriodaphnia **** CENT EQUITEMENT NLOC=1 GR LAB ID: 23104 SAMPLE TJP3B MEASUREMENT *Mortality 7Day Chr 0 1/30 PER-CERIODAPHNIA CRITICAVELS U. COLUM CENT MLOC-1 1/30 GR TVP3B LAB ID: 23104 SAMPLE 75.1 **** MEASUREMENT Repro Reduc Statre 0 1/30 GR CHERAVE EN LOS MO PER-7d Chr Ceriodaphnia CENT MLOC=1 1/30 GR SAMPLE MEASUREMENT ទៅទៅមាន មានស SAMPLE MEASUREMENT PERMIT REQUIREMENT SAMPLE MEASUREMENT ESCORECTE: **SAMPLE** MEASUREMENT personner property gamer and evaluate the information NAME/TITLE PRINCIPAL EXECUTIVE OFFICER TELEPHONE DATE submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my 0 knowledge and belief, true, accurate, and complete. I am aware SIGNATURE OF PRINCIPAL EXECUTIVE that there are significant penalties for submitting false information, TYPED OR PRINTED including the possibility of fine and imprisonment for knowing violations. OFFICER OR AUTHORIZED AGENT IUMBER YEAR MO DAY CODE COMMENTS AND: EXPLANATIONS OF ANY VIOLATIONS (Reference all attachments here) Chronic toxicity CTC=100% effluent

EPA Form 3320-1 (Rev.3/99) Previous editions may be used.

CHRONIC DEFINITIVE SURVIVAL AND REPRODUCTION/GROWTH TEST Statistical Analyses

Client:

TWELVE MILE CREEK RESTORATION PROJECT

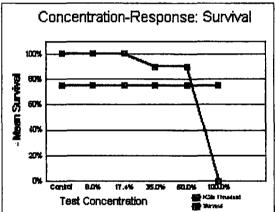
Sample Identification: EFFLUENT

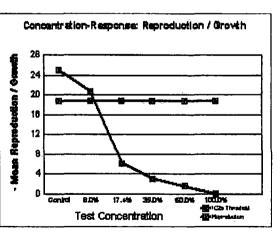
Test Date:

07-Dec-2010

Tests for Nort	nality and Heterogeneity of	Variance	Sampl	o Use			
Parameter	Test Used	Result		Sample Dat	e Sam	ple Used	
Normality	N/A	N/A	Sample A	07-Dec-10	07-Dec-10	08-Dec-10	
Variance	N/A	N/A	Sample B	09-D∞-10	09-Dec-10	10-Dec-10	
			Sample C	11-D∞-10	11-Doc-10	12-Dec-10	13-Dec-10

Tests for Differences in Survival and Reproduction								
Test Type Used:		Linear Inter	polation					
		% Effluent		, 				
Effect	Control	8.0%	17.4%	35.0%	50.0%	100.0%		
Survival	100.0%	100.0%	100.0%	90.0%	90.0%	0.0%		
% reduction	1	0.0%	0.0%	10.0%	10.0%	100.0%		
Reproduction	24,9	20.8	6.2	3,1	1.6	0,0		
% reduction (s	moothed)	16.5%	75.1%	87.6%	93.6%	100.0%		
Variance	6.99	17.07	16.62	5.66	4.04	0.00		
Acceptability C	riteria .	Value	Upper	Limit	1	ower Limit	,	
CV:Coeff. of V	ariation	10.6%	42.	0%		8.9%		
PMSD: % MSI)	11.1%	37.	0%		11.0%		
MSD:Min. Sign	ı, Diff.	2.8	Acceptabil	ity criteria l	imits not ex	ceeded		
IC25 Point Bst	imates			TEST RES	SULTS			
Survival	IC25=	58.3%		%Reductio	n per Linea	r Interpolat	ion	
Reproduction	IC25=	9.4%	·· • - · · · · · · · · · · ·	@CTC of		17.	4%	
Hypothesis Tes	ting			Survival ef	Tect	0.0	1%	
NOEC (Reprod	u	8.0%		Reproducti	on effect	75.	1%	
ChV (Reproduc	xt	11.8%				FA	IL.	





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Old temp.	24.9		25.6	25.6	25.3			1			
D=Dead N/A-Lost or not used											

Laby	T36594
Client	SCHLUMBERGER
Sample ID	EFFLUENT
NPDES#	SC
County	0
Month	12
Start & fed Date	40519
Start & fed Time	1445
Started & fed By	BB
Test Organism	Ceriodaphnia dubia
Neo. born date	40318
Neo. born time	BATCH 2
Test Type	SCCD
Dilution Water	MHSF
Unite for Conc.	%
%3rd BROOD	
Test vessels	30 ml
Test volume	15 ml
Incubator #	1
Light	16N/8dk
Initial Temp *C	25
Selenastrum	0.05 ml
YAT	0.05 ml
Test method	EPA 821-R-02-013:1002

	Comments	
 		

ROGERS & CALLCOTT HAIN OF CUSTODY RECORD

PAGE ____

	IABORATORY SER	VICES					,				
P.C	D. Box 5655, Greenville, SC 29606	ox 5655, Greenville, SC 29606				\angle	<u>N/</u>	_/		/ / Filtered (Yes/No)	
Phone (864) 232-1556 Fax (864) 232-6140 Shipping Address: 426 Fairforest Way						\angle	//_			/ / Cooled (Yes/No)	
Greenville, SC 29607						10				/ / Container Type (P/C)	
Client Name ROGHIS + CHILCOIL						134				/ / Container Volume	
Address						<u>~/</u>	\bot	\bot		/ Sample Type (<u>G</u> rab/ <u>C</u> omposite)	
	······································				N	iv/	\angle			/ Sample Source (WW, GW, DW, Other)	
Report To:					/N		/	/		/ Sample Source Chlorinated (Yes/No)	
Telephone No.	FAX No		Containers					\perp	/_/	Lab Receipt CI, Check	
PO No	Project No.		yn to	1 4			_			/ Lab Receipt pH Check	
			ŏ		A					Preserved (Code)	
Rogers & Yr 10 Tim	e Sample Desc	ription	1 10	\$2	A COL					A-None D-NoOH G-Boric Acid B-HNO ₃ E-HCL H-Ascorbic Acid C-H ₂ SO ₄ F-No ₂ S ₂ O ₃ I	
Lab No. Date			Fotal Numb	PARAMETERS	75					COMMENTS:	
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				G.	₹				_	36594A/36595	
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91981 12/7 15915 WARYSTALATMENT PLANT *										ON 12/1/10 Time AMOD.	
										SAMPLEN SETO-TO 0915 ON 12/1/10 TIME AMOP. By R+C	
										1	
SAMPLER Relinquished by/(Sig) Date/Time Received by (Sig) 12/1/10/355 Skipper Name		Received by (Sig Stripper Name &	ig.)		Date/Time /2/1/1/ /35,5		KNOWN HAZARDS ASSOCIATED WITH SAMPLES * DELIVENTS ETT LAB				
Relinquished by (Sig.)	Date/Time	Received by (Sig.				Date/Time					
		Shipper Name &									
Relinquished by (Sig.)	Date/Time	Received by (Sig.		3.)		Date/Time		Temperature of blank or representative sample			
		Shipper Name &	الوجوب والمساور						At time of lob session 1.4 T		
Seal # at'chd	by Recvd. Intact by	Seal #	at'ı	chd by	Rec	vd. In	tact	by()		P/C COC SOPM	

				GERS & CAL				HAIN	OF (CUSTO	DY I	RECO	ORD	PAGE		. —
		III.	P.O. Bo	BORATORY SE x 5655, Greenville, SC 29606 864) 232-1556 Fax (884) 23 g Address: 426 Fairforest Wa	32-6140				<u></u>	N	//	7	//		(Yes/No)	
		/	つ <u></u>	Greenville, SC 29	507				$/\overline{\rho}$	// /	/	1	/-/-	Container		
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Form Revised July 2008

R/C COC FORM

				GERS & CALL ABORATORY SERV			_	HA	N (OF (cus	TOD	Yf	REC	ORD		PAGE	/	
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	494041	Ш.	Phone (I Shippin	864) 232-1556 Fax (864) 232-6 g Address: 426 Fairforest Way	140					Δ	//	\mathcal{I}	7	7	77	/c	cooled (Yes	:/No)	
		1	2.	Greenville, SC 29607						/p			7	7	77	Cor	ntainer Type	(P/G)	
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Date/Time

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Shipper Name & #

Received by (Sig.)

Shipper Name & #

Seal #

Date/Time

at'chd by Recvd. Intact by

Form Revised July 2008

Seal #

Relinquished by (Sig.)

R/C COC FORM

2.6

Temperature of blank or representative sample

At time of collection_

At time of lab receipt_



and Lavironmental Control

DMR Attachment for Pass/Fail Whole Effluent Toxicity Test Results

TWELVE MILE CREEK RESTORATION PROJE Permit number SC

Month

12

Day

01

To

Discharge number

Day

31

FINAL LIMITS

Monitoring period From

04/01/2010-

10

Parameter Code TCP3E

10

Month

12

MLOC=1 CTC=17.40% offluor

			Mortality Data	- Acute and Chron	nic Tests	Reproduction	Data-Chronic Testa	<u>Only</u>
Date	07-Dec-10	Group	# Adults	# Dead	Pass/Fail	Average	Variance	Pass/Fn
Lab ID	23104	Control	20	0				
•		Test	20	0	Pass			
			Mortality Date	- Acute and Chro	nic Tosts	Reproduction	Data-Chronic Tests	Only
Date _		Group	# Adults	# Dead	Pass/Fail	Average	Variance	Pass/Fa
Lab ID		Control				<u> </u>		
		Test						
			Mortality Date	- Acute and Chro	nic Testa	Reproduction	Data-Chronic Tests	<u>Only</u>
Date		Group	# Adults	# Dead	Pass/Fail	Average	Variance	Pass/Fa
OI طعا		Control						,
•		Test						
			Mortality Data	- Acute and Chro	nic Tests	Reproduction	Data-Chronic Tests	Only
Date		Group	# Adults	# Dead	Pass/Fail	Average	Variance	Pass/Fa
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Date		Group	# Adults	# Dead	Pass/Fail	Average	Variance	Pass/Fa
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		一個問題的	Co	ntrol Survi	val and Re	production	ı by Test D	ay 🍪			_		
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		35.5	% Effluer	nt Survival	and Repro	duction by	Test Day	<u> </u>				imati ingebirnapi i Sethicadin	24.8
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			0	<u>.</u>							4	2 W	0.05 ml
1 11-2	A											2 W	0.05 ml
V7 11-2 I1 11-2 (5 11-2 V3 11-2	A		0							C		2 W	0.05 ml
1 11-2 5 11-2 3 11-2	A A		0							C		2 W	0.05 ml
1 11-2 5 11-2	A		0 0 0							0		2 W	0.05 ml
I1 11-2 (5 11-2) V3 11-2 F7 11-	A A A B		0 0 0							0		e rejuded	0.05 ml
I1 11-2 (5 11-2 V3 11-2 F7 11-3 G 11-20 Random 0	A A A B B B		0 0 0 0									e rejuded	0.05 ml EPA 821-R-02-013:1002
11 11-2 5 11-2 73 11-2 F7 11- 6 11-2 Landom	A A A B B B		0 0 0 0									e rejuded	0.05 ml EPA 821-R-02-013:1002
1 11-2 5 11-2 /3 11-2 F7 11-3 6 11-20 andom 0	A A A B B B		0 0 0									e rejuded	0.05 ml EPA 821-R-02-013:1002
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ROGERS & CALLCOTT

CHAIN OF CUSTODY RECORD

PAGE _____OF ____

TA	BORATORY SERV	VICES										
P.O. Box	c 5855, Greenville, SC 29606			!			L	N/	_/	\bot	\perp	Filtered (Yes/No)
	864) 232-1556 Fax (864) 232-6 g Address: 426 Fairforest Way	1140					$\angle y$	<u>/</u> _		\bot		/ / Cooled (Yes/No)
ρ	Greenville, SC 29607						/p	_				/ / Container Type (P/C)
Client Name Kockes	4 CALLCOTT				•	L	<i>}4</i>					/ Container Volume
Address			j				1/		\bot	\mathcal{L}		/ Sample Type (Grab/Composite)
·	·	<u>.</u>			1	NW	<u>/</u>				\Box	/ Sample Source (WW, GW, DW, Other)
Report To:	· · · · · · · · · · · · · · · · · · ·	·				<u>N /</u>	\perp	_/		_/	\mathcal{L}	Sample Source Chlorinated (Yes/No)
Telephone No.	FAX No		ners		\perp	\bot	\bot	\bot	\bot	<u> </u>		Lab Receipt CL Check
PO No			Containers				<u>_</u>	_	_			Lab Receipt pH Check
			Ö		A							Preserved (Code)
Rogers & Yr/O Calicott Lab No. Date	Sample Desc	ription	1	25	Ty Man	,						A-None D-NoOH G-Baric Acid B-HNO, E-HCL H-Ascarbic Acid C-H ₃ SO ₄ F-No ₅ S ₂ O ₅ I-
Lab No.		• •	Total Number	PARAMETER	ACUTERCHAMIC TOXICITY					:		COMMENTS:
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		· · · · · · · · · · · · · · · · · · ·										SAMPLEN SETONT @ 0915 ON 12/7/10 TIME MOP. By R+C
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Relinquished by (Slg.)	Date/Time	Received by (Sig				,	Date/					
Relinquished by (Sig.)	Date/Time	Received by (Sig. 6) Shipper Name &				C	Date/	Time			•	peroture of blank or representative sample time of collection 0.6
Seal # at chd by		Seal #		chd by	VO	Recv	d. Int	tact	by 🔿		_ At	time of lab receipt 1.4 c
Farm Daylord July 2000	-											P./C COC FORM

Form Revised July 2008

		4
	Client Nam	· K
O	Report To: Telephone	No
	Rogers & Collcott	Yr_10

ROGERS & CALLCOTT CHAIN OF CUSTODY RECORD PAGE ____ OF ___

(5)		IA	BORATORY SEE	RVICES		Τ				4//	7	, ,	Filtered (Was All)
		Phone:(8	5655, Greenville, SC 29606 64) 232-1556 Fax (864) 232	-6140							/ 	$-\!\!\!/$	/ Filtered (Yes/No) / Cooled (Yes/No)
). Suribbing	Address: 426 Fairforest Way Greenville, SC 2960	7	1					1 1	-/-	/	Container Type (P/G)
Client Nan	ne K	GERS	+ CALL COTT	<u> </u>					26		1	/	Container Volume
Address						l		16	2/	1	/ /	7	Sample Type (Grab/Camposite)
			-		Ì	Ì		WN		1 1	/ -	/	Sample Source (WW, GW, DW, Other)
Report To:	•						/	N		/	1	/ /	Sample Source Chlorinated (Yes/No)
					S S	1		1	7	17	/ /	\forall	Lab Receipt Cl. Check
Telephone			÷		Containers		//	7	/	//	7	7	Lab Receipt pH Check
PO No			Project No.		-		A						Preserved (Code)
Rogers & Collectt	Yr_10	Time	Sample Des	scription	otal Number of	88	" F	-					A-None D-NoOH G-Boric Acid B-HNO, E-HCL H-Ascorbic Acid C-H ₂ SO _a F-No ₂ S ₂ O ₃ !-
Lab No.					Ž		13.0						COMMENTS:
						PARAMETERS	CHROWIE						
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		,	EH. DISC	HARGE	-		-	*	•				ON 12/7/10 TIME AMOR. By R+C
													B, R+C
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Relinquis	hed by (S	ig.)	Date/Time	Received by (Sig 5 Shipper Name &	#				Date/1			A	t time of collection
Seal #	at'o	chd by	Recvd. Intact by) Seal ∦	ot'	chd b	yΟ	Recv	d. Inte	act by			R/C COC FORM
	July &												

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ROGERS & CALLCOTT

CHAIN OF CUSTODY RECORD >

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P.O. Box 5	655, Greenville, SC 29806		1	· <u> </u>		1/		Filtered (Yes/No)	1	
Shipping A	4) 232-1556 Fax (864) 232-6140 Address: 426 Fairforest Way Greenville, SC 29607				/ <u>y</u>		\bot	Cooled (Yes/No)		
Para	•				<u> [P]</u>			// / Container Type (P/G)		
Client Name (nGENS	+CALLCOTT	1		. 4	<u> </u>			/ / Container Volume		
Address					2/_			/ / Sample Type (Grab/Composi	te)	
	·			MW	$/\!\!/$			/ / Sample Source (WW, GW, DW,	Other)	
Report To:		1		N/				Sample Source Chlorinated (Ye	s/No)	
Telephone No	FAX No.	Jers					7	Lab Receipt Cl, Check		
		Containers		\mathcal{T}	77	7	7	/ Lab Receipt pH Check		
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Rogers & Yr/O Calicott Lab No. Date	Sample Description	nber of	92 3	2				A-None D-NoOH G-Boric Acid B-HNO, E-HCL H-Ascorbic Ac C-H ₃ SO, F-No ₅ S ₃ O ₃ I-	ld	
Lab No.	•	Ncmb	PARAMETERS THONIC	וביו				COMMENTS:		
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Relinquished by (Sig.)	Date/Time Received by (Signature & Shipper Name &	j.)	. ·		<u>//() /</u> Date/T		7			
Relinquished by (Sig.)	Date/Time Received by (Sig				Date/T	ime	Temperature of blank or representative sample			
(5)	Shipper Name &	#						At time of collection 1.3	3	
Seal # at chd by	Recvd. Intact by Seal #	ot'c	hd byC	Rec	rd. Into	ct by(At time of lob receipt 2.6.	:	

ROGERS & CALLCOTT LABORATORY SERVICES

AN EMPLOYEE-OWNED COMPANY

P.O. Box 5655, Greenville, SC 29606 Phone: (864) 232-1556 - FAX: (864) 232-6140

Laboratory Services Report

Client:

Schlumberger Technology Corporation Sangamo - Twelve Mile Creek Project

Attention Gary Odom by email

Date Reported:

01/03/2011

South Carolina Laboratory Identification 23105

North Carolina Laboratory Certificate Number 27

NELAP Laboratory Identification E87822

Sample Number

Sample Description

AC92779

Schlumberger Technology TMC Water Treatment Plant Effluent Discharge grab,

collected on 12/17/2010 at 10:10

AC92795

Schlumberger Technology TMC Water Treatment Plant Effluent Discharge grab,

collected on 12/20/2010 at 09:45

AC92959

Schlumberger Technology TMC Water Treatment Plant Effluent Discharge

composite, collected on 12/22/2010 at 09:30

The attached report is for the samples that were received and are referenced above. Rogers and Callcott maintains a formal QA/QC program. Unless otherwise noted, all analyses performed under NELAP certification have complied with all the requirements of the NELAC standard. The analyses met the QA/QC confidence interval for each test method unless otherwise qualified. Estimated uncertainty available upon request.

We appreciate the opportunity to be of service to you. Please contact us at (864) 232-1556 should you have any questions about this report.

Results released by:

authorized signature

Carbon copy: Email to L Ketcham P Dougher A Kohler S Cary

Results reviewed by:

This report may not be reproduced, except in full, without written permission from Rogers & Calicott, Inc.



Case Narrative

AC92779 Schlumberger Technology TMC Water Treatment Plant Effluent Discharge grab, collected on 12/17/2010 at 10:10

Grab sample AC 92779 was subcontracted to ETT for Chronic Toxicity testing.

AC92795 Schlumberger Technology TMC Water Treatment Plant Effluent Discharge grab, collected on 12/20/2010 at 09:45

This sample was an additional grab subcontracted to complete the Chronic Toxicity testing.

AC92959 Schlumberger Technology TMC Water Treatment Plant Effluent Discharge composite, collected on 12/22/2010 at 09:30

This sample was an additional composite subcontracted to complete the Chronic Toxicity testing.

Sample Number	Sample Description, Date and Time Collected											
AC92779	Schlumberger Technolo at 10:10	gy TMC Water	Treatment Pla	ant Effluent	Discharge grab, o	collected on	12/17/2010					
Parameter	Result	Unit	Flag	RDL	Date/Time	Analyst	Method					
Subcontracted Sample Analysis	Completed				01/03/2011 00:00							

Analysis comment for Subcontracted Sample Analysis: See enclosed subcontract report which includes a total of 7 pages for Chronic Toxicity from ETT Environmental inc.

Sample Number	Sample Description, Date and Time Collected						
AC92795	Schlumberger Technology TMC Water Treatment Plant Effluent Discharge grab, collected on 12/20/2010 at 09:45						
Parameter	Result	Unit	Flag	RDL	Date/Time	Analyst	Method
Subcontracted Sample Analysis	Completed				01/03/2011 00:00		·

Analysis comment for Subcontracted Sample Analysis: See enclosed subcontract report which includes a total of 7 pages for Chronic Toxicity from ETT Environmental Inc.

<u>Sample Number</u> <u>S</u>	Sample Description, D	ate and Time (<u>Collected</u>				
	Schlumberger Technolo 12/22/2010 at 09:30	ogy TMC Water	Treatment Pl	ant Effluent	Discharge compo	site, collect	ed on
Parameter	Result	Unit	Flag	RDL	Date/Time	Analyst	Method
Subcontracted Sample Analysis	Completed				01/03/2011 00:00		··· ·· · · · · · · · · · · · · · · · ·

Analysis comment for Subcontracted Sample Analysis: See enclosed subcontract report which includes a total of 7 pages for Chronic Toxicity from ETT Environmental Inc.

Subcontracted Sample Analysis

P.O. Box 16414, Greenville, SC 29808

4 Craftsman Court, Greer, SC 29650

Ceriodaphnia dubia Survival and Reproduction Test

EPA-821-R-02-013 Method 1002

Test Species:

Ceriodaphnia dubia

Client: SCHLUMBERGER

Facility: EFFLUENT

NPDES #: SC

Test Date:

17-Dec-10

Laboratory ID#: T36655

Test Reviewed and Approved By:

Duth Solz-

Robert W. Kelley, Ph.D. Laboratory Manager



Certification #E87819

SCDHEC Certification #23104

Test results presented in this report conform to all requirements of NELAC, conducted under NELAC Certification Number E87819

Florida Dept. of Health. Included results pertain only to provided samples.

NCDENR Certification # 022



South Cardian Department of Realth and Environmental Control

DMR Attachment for Chronic Multi-Concentration Whole Effluent Toxicity Test Results **Using Linear Interpolation**

TWELVE MILE CREEK RESTORATION F Permit number SC

Discharge number

FINAL LIMITS 04/01/2010-

Mortality Data

Parameter Code TCP3B

Reproduction Data

MLOC=1 CTC= 17.40% effluent

		Yem	Month	Day		Year	Month	Day
Monitoring period	Prom	10	12	1	To	10	12	31

						
		Group	# Adujts	# Dead	Group Average	Group Variance
Date	17-Dec-10	. 0 .	10	0	25.1	3.43
Lab ID	23104	8	10	0	18.6	13.60
LEO IU		17.4	10	0	14.5	31.39
		35	10	0	4.9	20.10
IC25=	< 8.0%	50	10	0	3.1	8.32
48 hr Chronic LC50 =	> 100.0%	100	10	10	0.0	0.00
48 IF CHORIC LC30	> 100,076	100	10	10	0.0	u.uu
					 	
					 	
•					<u> </u>	
% Survival Effect at CTC	- 0.0%		<u> </u>		<u> </u>	
% Reproduction Effect at						
70 Kejromenou enoer u	72.27	•				
			3.6 metall	ty Data	Reproduc	tion Data
			Motes	ty Data		
		Group	# Adults	# Dead	Group	Group
		.		" 2	Average	Variance
					Average	TOURISE
Dete						
Date	77104				<u> </u>	
Date Lab ID	23104					
	23104					
Lab ID	23104					
Lab ID 1C25=	23104					
Lab ID	23104					
Lab ID 1C25-	23104					
Lab ID 1C25-	23104					
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1.ab ID 1C25= 48 hr Chronic I.C50 =						
Lab ID 1C25= 48 hr Chronic LC50 = % Survival Riflect at CTC						
Lab ID 1C25= 48 hr Chronic LC50 =						
Lab ID IC25= 48 hr Chronic LC50 = % Survival Effect at CTC % Reproduction Effect at	 >= acro=					
Lab ID IC25= 48 hr Chronic LC50 = % Survival Effect at CTC % Reproduction Effect at Signature of Principal Ex	>= t CTO-					
Lab ID 1C25= 48 hr Chronic LC50 = % Survival Effect at CTC % Reproduction Effect at	>= t CTO-					

CHRONIC DEFINITIVE SURVIVAL AND REPRODUCTION/GROWTH TEST Statistical Analyses

Client:

TWELVE MILE CREEK RESTORATION PROJECT

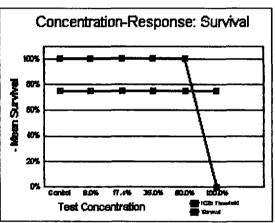
Sample Identification: EFFLUENT

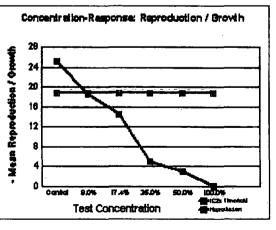
Test Date:

17-Dec-2010

Tests for Nort	nality and Heterogeneity of	Variance	Sampl	e Use			
Parameter -	Test Used	Result		Sample Date	te Som	ple Used	
Normality	N/A	N/A	Sample A	17-Dec-10	17-Dcc-10	18-Dec-10	
Variance	N/A	N/A	Sample B	19-Dec-10	19-Dec-10	20-Dec-10	
			Sample C	21-Dec-10	21-Dec-10	22-Dec-10	23-Dec-10

Test Type Used: Linear Interpolation							
		% Effluent		, <u>.</u> ,			
Effect	Control	8.0%	17.4%	35.0%	50.0%	100.0%	
Survival	100.0%	100.0%	100.0%	100.0%	100.0%	0.0%	
% reduction		0.0%	0.0%	0.0%	0.0%	100.0%	
Reproduction	25.1	18.6	14.5	4.9	3.1	0.0	
% reduction (s	moothed)	25.9%	42.2%	80.5%	87.6%	100.0%	
Variance	3,43	13.60	31.39	20.10	8.32	0.00	
Acceptability C	riteria	Value	Upper	Limit	I	ower Limit	
CV:Coeff. of V	ariation	7.4%	42.	0%		8.9%	
MSD: % MSD)	13.6%	37.	0%		11.0%	
MSD:Min. Sigr	. Diff.	3.4	Acceptabil	ity criteria l	imits not ex	ceeded	
IC25 Point Est	im ates			TEST RES	BULTS		
Survival	IC25=	62.5%		%Reductio	n per Linea	r Interpolati	on
Reproduction	IC25=	< 8.0%		@CTC of		17.4	%
	ting			Survival ef	Tect	0.0	%
Typothesis Tes							
<i>Hypothesis Tes</i> NOEC Reprodu	•	<8.0%		Reproducti	on effect	42.2	%





Comments			

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Old temp. °C 24.8 24.9 25.2 24.4 25.1	New temp	. °C	24.8	25.1	24.9	24.3	24.9					
D=Dead N/A-Lost or not used	Old temp.	°C				24.4	25.1			25.6]	
	D=Dead	N/A	-Lost or	not use	d						-	

LADS	T36655
Client	SCHLUMBERGER
Sample ID	EFFLUENT
NPDES#	SC
County	0
Month	12
Start & fed Date	17-Dec-10
Start & fed Time	1400
Started & fed By	AE
Test Organism	Ceriodaphnia dubia
Neo, born date	18-Dec-10
Neo, born time	BATCH 2
Test Type	SCCD
Dilution Water	MHSF
Unite for Conc.	%
%3rd BROOD	
Test vessels	30 ml
Test volume	15 ml
incubator#	1
Light	1611/8dk
Initial Temp *C	5 12-10
Selenastrum	0.05 ml
YAT	0.05 mJ
Test method	EPA 821-R-02-013:1002

Col	nments
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Proc. Cellett

1. 7. 6		
TOXICLY	CHAIN OF	CUSTODY

Mailing Address: PO Bex 16414, Greensille, SC 29606-7414

Pa	of_	

Slopping Address: 4 Craftsman Ct, Greer, SC 29650

FAX: (864) 877 - 6938

Facility:	Mile Creek							1	i		L						P	10319	(86-)87	7-69	12 ox	(600) 891	.23	25			63113	A: m	alle	jetim	sebros	overd	blc	3366
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EIT ASSIGNED LAB ID #	SAMPLE ID	Clean Water Act	Stomweter	Non-Regulatory	1/2 gallon plantic	1 gatton plantic	i gallon subitainer	1 iller glass	S gallon bucket	Other*	water i as	Other*	Composite - Flow Prop.	Composite-Time Prop.	Pessoffeil	Deffa. (Multi-Cone.)	C. debia: RPA 2002	D. simblene: RPA 2002	Pethead 48hr:EPA 2000	Fathead 96hr;EPA 2000	Myaid: RPA 2007	C. dubia: EPA 1002	D. emblgue: RPA 1002	Mysid: EPA 1007	TIE/TRE	WER	10 Day Hyalisia	10 Day Chironomus	Other	Alkalinity	Hardness	Conductivity	Residual Chladne	Salinky	Ammonie-N	Mecroinvertebrate ID
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COMPOSITE SAMPLING PROCEDURES

Composite semples must be collected over a 24 hour period. Time Proportional: 1 sample each hour for 24 hours. Equal volumes. or at minimum 1 sample every 4 hours over 24 hours. Flow Proportional: As per instructions in NPDES permit.

TEMPERATURE MONITORING PROCEDURES

Sample temperature during collection and transport must be between 0.0 and 6.0 °C. Samples must not be frozen. Use water ice in sealed bags. Measure temperature upon receipt and record. Notify client to resample if temperature is out of range.

HOLD TIME PROCEDURES

For tonicity testing the sample must first be used within 36 hours of sample collection (completion of composite sample). Sample may not be used after 72 hours from sample collection.

^{*}Special Instructions:

Sample Cus	Secure	Receipt			
Date	Time	Relinquished By / Organization:	Received By / Organization	Area	Temp ℃
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Sampling	
Composite	Grab
Start Date/Time:	Deta/Time: 13-17/10 1010A-
Set By:	Collected By:
End Date/Time:	3.K. Scans
Ended By:	Temp. et Collection:



ROGERS & CALLCOTT

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			P.O. Box	5655, Greenville, SC 29606			Í				N/	7	$\int_{-\infty}^{\infty}$	/ / Filtered (Yes/No)
	4000		Phone (8) Shipping	84) 232-1556 Fax (864) 232-6 Address: 426 Fairforest Way		İ	1			Δ			/_/	/ / Cooled (Yes/No)
		1	0.	Greenville, SC 29607										/ / Container Type (P/G)
	Client Nan	ne 🙏	66A15	+CALLCOTT						y 26/			/	/ / Container Volume
	Address													/ / Sample Type (Grab/Composite)
									NN					/ Sample Source (WW, GW, DW, Other)
	Report To	;							N/					Sample Source Chlorinated (Yes/No)
	Telephone	No.		FAX No		Containers		\mathcal{L}		\bot		\coprod		/ Lab Receipt Cl, Check
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	Kelinquis 3	hed by	(Sig.)		Shipper Name &									
	 		4	Date/Time	Received by (Sig					Date/	Time		7	Temperature of blank or representative sample
	Relinquis 5	hed by	(Sig.)	1	Shinara Nama	. п				1				At time of collectionC
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	P.O. Box 5	655, Greenville, SC 2	29606		Ï				<u> </u>] /	\bot	\bot	\bot	/ / Filtered (Yes/No)
		4) 232-1556 Fax (6 Address: 426 Fairfore	est Way	40					$\sqrt{\lambda}$	_	\bot	\mathcal{L}		/ / Cooled (Yes/No)
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Form Revised, July 20														R/C COC FORM



Twelvemile Creek Restoration Project STC · Cateechee, SC

January Monthly Construction Photo Log



Snow and ice shut down operations at the Site.



Snow and ice cover the SMU pond.



Clare Dredge dredging hole at WS1 for Siphon installation.



Floating bridge installed to access dredge from a lower water level.



Dredge Clare operating at target water elevation of 750.0'.



Downstream view of the WSI dam without water flowing over the top (due to siphon operation).